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Rural Lines

RURAL ELECTRIFICATION ADMINISTRATION • U. S. DEPARTMENT OF AGRICULTURE

DECEMBER
1958

THANKS TO AREA COVERAGE,
EVEN SANTA'S A CO-OP MEMBER

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Who Provides Service Entrances? See page 3.

TELEPHONE SECTION
NEW BUILDING DESIGNS. SEE PAGE 15



A Message from the

ADMINISTRATOR

Here's a scene that will be enacted in many rural homes this Christmas Eve: The whole house is lighted—Christmas tree, window decorations, and yardlights for any guests who may drop in. Then the phone rings. The call is from a son on military service, or from a daughter who works half-way across the continent, and the message is simply: "Merry Christmas, everyone." It is an especially thrilling message because it is the first year it has been possible to call home—the phone line is new this year.

People in the rural electrification and telephone programs everywhere help bring these happy scenes about. The REA staff joins me in wishing all of you an equal share of this Christmas happiness, and best wishes for the coming year.

Rural Lines

David G. Hamel
Administrator.

THIS MONTH'S COVER

No, Virginia, this isn't the real Santa Claus on our cover. It is Conrad Miller, proprietor of Santa Claus House and postmaster of North Pole, Alaska. Mr. Miller is a consumer of the Golden Valley Electric Association, Inc., whose headquarters is at Fairbanks, 10 miles north of North Pole, Alaska. You may think Mr. Miller was a little confused in his geography when he chose the name North Pole for a post office south of the Arctic Circle; but if you could see his stamp cancellations about this time of year you'd realize he was about as confused as an Arctic fox.

Editor: Hubert Kelley, Jr. This month's contributors: William P. Stokesberry, Lucile Holmes, Louisan Mamer, Bernard Krug, Jack Howard.

Should Power Distributors Provide Service Entrances?

Avoiding the safe wiring bottleneck was the subject of a major presentation at the fifth annual National Power Use Conference in Buffalo last October. Here are excerpts from the two featured addresses.

By William C. Wenner, manager, Northwestern Rural Electric Cooperative Association, Cambridge Springs, Penna.

WE have been relatively fortunate at our co-op for almost 20 years with respect to service entrances. At least 95 per cent of our first 7,000 service entrances were three-wire, 60 ampere capacity. Our load grew very well and without much effort.

The 60 ampere entrance allowed us to achieve a saturation of more than 60 per cent for ranges and water heaters as well as considerable electrification of our small to average farms. From the beginning we promoted meter poles for larger farms and profited thereby. Early meter poles were of 60 and 100 ampere capacity.

Although our system was originally designed for average usage of 90 KWH per month, we reached an average of nearly 300 KWH per month before we

needed to make major improvements in our distribution plant and to change large numbers of transformers. And except for a relatively few isolated cases, our original 60 ampere entrances were quite adequate until our average usage began to approach 500 KWH per month. Then our load growth slowed very noticeably, voltage complaints increased, and trouble calls caused by failure of meter sockets and cartridge fuses skyrocketed.



WE had seen what was coming and adopted a standard of 100-ampere entrance capacity on all new homes and 200-ampere capacity for all meter poles. Along with this move, we began a promotional campaign to encourage up-rating entrances and meter poles.

Up to this time we had never subsidized entrances or wiring in any way and we felt that education and need would take care of this up-rating. It did not!

We were not willing to sit back and watch our rate of growth decline.

After much study we adopted

the following three-part program to speed the up-rating of service entrances.

We recommended nothing less than 200-ampere meter pole service for any farm. We had seen that the high cost of heavy conduit, disconnect switches and 4/0 wire were resulting in too-small meter pole services being installed.

We changed to current-transformer type metering, using only one current transformer, one inch conduit, No. 12 wire, a one-inch socket and a 2-wire, 5-ampere meter.

We supply the meter pole and complete metering equipment, all free of charge and installed, for any farmer who will do the following:

- 1. Install service entrances of at least 100-ampere capacity on the residence and at least one other building.**

- 2. Run at least No. 4 copper equivalent conductors from the meter pole to each 100-ampere entrance.**

- 3. Secure re-inspection of the new entrances and all power circuits.**

This program costs us very little more than we previously spent on a heavy duty socket and a 50-ampere meter and saves the farmer between \$125 and \$250.

To encourage up-rating of service entrances for small farm and residential users, we provide, free of charge, a 100-ampere, 18-circuit breaker panel to replace the old 30-ampere or 60-ampere Main—Range combination panel.

We require a \$40.00 deposit and a \$3.00 inspection fee when this panel is picked up at our office. When the new entrance has been inspected and approved,

we immediately refund the \$40.00 deposit. This \$40.00 usually goes to the electrician.

IN one operation we eliminate many sources of potential service calls and complaints, in addition to improving voltage within the residence. We eliminate the old, weathered entrance cable, meter socket, switch and meter. The new entrance is grounded in accordance with modern grounding standard. This is a major improvement.

To date, we have provided 425 100-ampere panels for replacements. A recent survey indicates that the following appliances have been installed along with the new entrances: 140 ranges, 240 water heaters, and 46 clothes dryers. This adds up to 2,416 KW, 1,250,000 KWH and about \$20,000 gross annual revenue.

The survey indicates that these consumers will purchase the following appliances in the near future: 40 ranges, 22 water heaters, 86 dryers, and 90 other major appliances. These will earn an additional \$4,600 annual revenue.

Seventy percent of those reporting told us that they could see noticeable improvement in voltage and performance.

OF all potential service suppliers, we are usually at a new homesite first. We stake the job and as soon as possible erect a pre-assembled temporary pole, complete with meter, disconnect switch, and grounded type outlets for 120 and 240 volt service. The consumer may use this installation free of charge for 4 months. If he uses it longer, we will charge a monthly rental for its use. This has eliminated cost,

confusion, and public relations problems. It is building good-will at a critical time in our relationship with a new consumer. We are satisfied that it will build load and revenue to more than justify the cost to the co-op.

Correcting the Bottleneck

By Paul F. O'Neill, national representative, General Electric Company, Louisville, Ky.

The electric industry has forecast residential and rural sales of approximately 400 billion kilowatt hours in 1967, and predicts that they will top 900 billion kilowatt hours in 1977.

If your utility is planning to enjoy in 1967, residential and rural sales that are, at least, 2½ times its 1957 sales, your management must be considering ways and means of breaking the existing bottleneck in service entrances and branch circuits.

Your utility might include in its program a plan correcting the service bottleneck wherein all the charges are handled as a capital expenditure or one wherein the charges are proportioned between capital and operating expenses.

Today, of the more than 3,000 electrical utilities serving these United States, I know of no more than a dozen that have a complete overall service entrance equipment program.

Some of these utilities provide the complete service entrance equipment and the major main branch circuits for customers using ranges and other major appliances. Other utilities offer wiring allowances when a major appliance is purchased and installed in a new or existing home.

Some will spend up to three times their estimated increased annual revenue or more to provide facilities for customers beyond their standard policy.

Using the three-to-one ratio as a basis of business judgment, we might up-grade a home now using 2,500 kilowatt hours per year so that the homeowner will use about 8,000 kwh per year.

Assuming that all of this increased usage falls in the last block of 1½¢ per kilowatt hour, it will produce an increased revenue of \$82.50 per year. Three times \$82.50 or \$247.50 will more than cover the expense of upgrading the service entrance.

Suppose a package were available comprising the meter socket and six main circuit positions as either a 100-ampere, 150-ampere or 200-ampere entrance. Let's assume that this could be mounted on the exterior of the home, or semi-flush with the exterior of the home, or so that the main circuit positions were available from within the structure directly in back of the meter socket.

Electric utility managements might well counteract competition by placing into effect capitalization and/or operating expense programs which remove the major bottleneck to greater rural and residential kwh usage.



SAFETY



Conference Concentrates on Fatalities

Why are linemen being killed? Why has the fatality rate of REA borrowers gone up drastically during 1958?

These questions dominated the thinking and conversation of the 268 persons attending the 16th Annual Job Training and Safety Conference of rural electric instructors and project personnel held at Denver in October.

The agenda was changed to permit an extra night session to discuss, case by case, 10 of the 26 fatalities which have occurred to employees of REA-financed rural electric systems during 1958, to the date of the conference.

The 1958 Conference was sponsored by Trade and Industrial Division, the State Board for Vocational Education; and the Colorado Rural Electric Safety and Job Training Advisory Committee. Its opening sessions were addressed by the REA Administrator, and officials of the office of the Governor of Colorado and the State vocational education system.

The special session in which each fatality case was studied showed five principal accident causes:

1. Lack of safety policies and regulations.
2. Poor supervision.
3. Lack of enforcement.

4. Poor job planning.

5. Lack of safety protective equipment.

Following are six brief excerpts of cases discussed.

AN OLD HAND ERRED. The lineman for this midwestern co-op was an old hand, "the best in the business." He was on a pole, instructed to notify the foreman by radio when he wanted the line deenergized, so he could begin splicing. He had on no rubber gloves. He laid his hand on an energized conductor—that was it.

Because he was a good lineman, no one reminded him about the gloves. Other workmen on the ground noticed it, but didn't remind him. For apparently the same reason, the foreman didn't check.

BOOM AND HOT LINE. A boom operator, wearing no rubber gloves, was setting poles on a midwestern co-op's lines. Three men were guiding the pole with guide lines. They asked the operator to lay the boom back, so the top of the pole would be away from the line. The operator, in doing so, grazed the line with his ungrounded boom—the line was hot.

The supervisor failed to check the line, ground the equipment, or make sure that personal protective equipment was worn.

TORNADO AFTERMATH.

After a tornado in a southwestern state, the lineman repairing damage was on a dead-end pole, 34 kv above and 7.2 kv below. The 7.2 kv was hot on one side, dead on the other. The lineman touched a hot conductor—he had on no rubber gloves.

The supervisor had failed to check to see if the line was hot, use protective grounds, and see that the lineman used rubber gloves.

WRONG SIGNAL. The crew was instructed on how to make a switch from a single-phase line to a new three-phase on a non-standard switch point. The foreman was connecting a portable generator for temporary service while the crew made the disconnect. The lineman on the pole was going to make up a single-phase deadend. He was notified by the crew that a disconnect had been made—the switch point was out of sight. He checked by radio again to make sure. He put his hoist, without rubber gloves, on the conductor—which was energized. The crew had made a disconnect on the road phase, but not the field phase.

The victim didn't make his own ground, or use safety protective equipment.

BAD JOB PROCEDURE. A lineman was setting the tap changer in a transformer to boost the voltage to a consumer's house. He was not wearing rubber gloves. He was working too high on the pole, astraddle the guy wire with his safety belt between the neutral wire and the top secondary wire. He made contact with the bus wire when reaching between the high voltage bushing and the lighting arrester.



W. L. Buckner, Colorado Safety and Job Training Instructor (left), and Byrl Shoemaker, Ohio State Supervisor, Trade and Industrial Education (right), at Denver Conference.

Thorough training, use of protective equipment, and strict enforcement of safety practices would have prevented his death.

DISREGARD OF INSTRUCTIONS. An apprentice lineman, opening three disconnects with a telescoping fiberglass hot stick, failed to open the "B" phase. Instead of reporting this failure, he announced that the disconnects were made. The foreman, before going to work, "buzzed" all but this "B" phase, which was out of reach. He told the apprentice, that since the regulator tops were wet, that he should use a ladder. The apprentice disregarded this, climbed up on the hanger brackets, slipped—put his hand on the hot loop.

This accident has most of the mistakes in the book—no rubber gloves, failure to use grounding equipment, failure to check equipment, poor instruction, and poor enforcement.



Nebraskans Plug Corn Drying At Picking Contest

FARMER-SPECTATORS watching the start of the Seventh Annual Nebraska Mechanical Corn Picking Contest on the morning of October 9, 1958, were given a subliminal-sales pitch on corn drying. The men with the hollow wooden squares measuring the wasted grain on the ground suggested graphically to the watchers that more corn could be harvested by picking earlier and drying.

Nebraska's corn picking contest and machinery exposition was held October 9 and 10 at Tekamah, home of the Burt County Rural Public Power District, on the Missouri River bottomlands. The show was jointly sponsored by the local Chamber of Commerce, the Nebraska Inter-Industry Electric Council, WOW-TV, and the University of Nebraska Extension Division.

The first day they ran off the state corn picking championships in a ripe-brown field 7 miles north of town. There were three classes—single row pickers, two-row pickers, and picker-shellers.

The second day was devoted to equipment demonstrations by commercial exhibitors and the Inter-Industry Electric Council. These included the operation of a

radio-controlled tractor, and shelling and drying demonstrations.

Field Losses

The theme of the corn-drying demonstrations was saving the corn lost in the field by mechanical pickers by picking earlier and drying.

The corn-picking contest judges with the hollow squares use a formula to determine how much corn is left in the field. Ear corn loss is obtained by picking up all ears between two rows for specified distances, according to row spacing. They count 210 feet for a 36-inch row; 180 feet for a 42-inch row. The ears are weighed to find out the bushels per acre lost. This is done in several areas over the field to strike an average.

Shelled corn loss is obtained by picking up all kernels between two rows; for 49 inches in a 36-inch row and 42 inches in a 42-inch row. The number of kernels divided by 20 is the shelled corn loss in bushels per acre. This is also spot-checked to get a good average.

Nebraska extension experts say that about 10 percent of the state's corn crop will be left in

the field this year, about 25 million bushels of the estimated 248-million bushel bumper crop.

A normal machine loss of about 4 percent can be expected at the earliest time that corn is safe for cribbing, or when kernel moisture is about 20 percent. As the corn dries beyond this point the normal loss increases about 3 percent per week for about four weeks, or until the cobs become dry. Weather and insect hazards increase during this period.

Earlier Picking

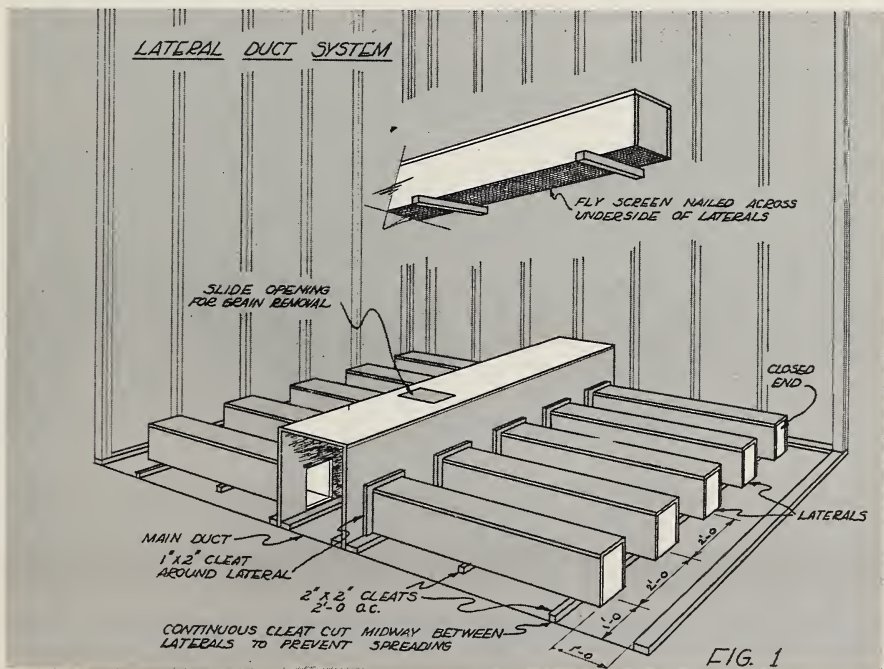
Nebraska experiment station people, noting that mechanical corn pickers operate most efficiently and with the least field loss when the moisture content of the kernel is 20 percent or higher, suggest harvesting it at 25, 30, or even 35 percent kernel moisture if adequate provision is made for drying it. Since shelled corn and

husks carried into the crib slow down natural drying of corn, field shelling is of advantage.

High moisture shelled corn can be dried with forced heated air before it is put in the bin. However, too much heat may take some value from the corn. If the shelled corn contains no more than 25 percent moisture it can be placed directly in the bin and then dried with forced unheated air, by using an electric fan.

The lateral duct system shown in Figure 1 for drying small grain or shelled corn economically with unheated air is reported by E. A. Olson of Nebraska's Agricultural Engineering Extension Service. It is designed for an air flow of 3 cubic feet per minute per bushel and a grain depth of not more than 8 feet. One may be built to fit most farm storages.

Lateral duct system designed by Nebraska Extension Service for corn drying.





Corn picking Contest fans like to see the drying equipment in action.



Nebraska corn picking champs (left to right) Elvin R. Denman; Von Gertsch; and Duane Finch.



Exhibits of drying equipment were varied.

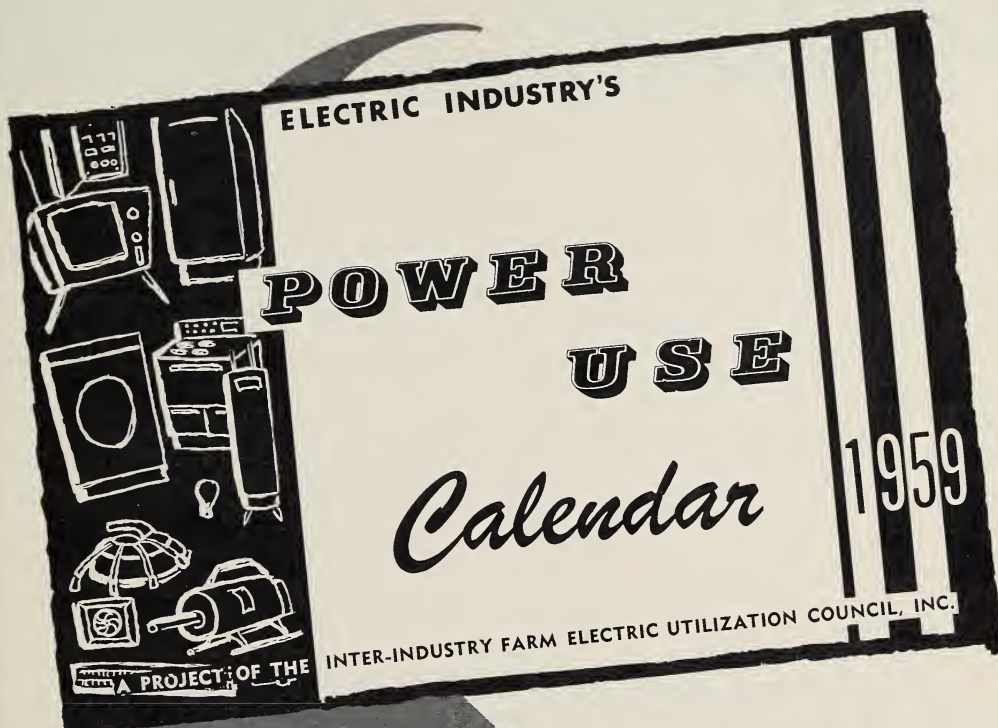
Batch dryers attracted much interest.



Main ducts should be 2 by 3 feet in size in a 20 by 16 foot crib; 4 by 4 inches in a 36 by 30 foot crib. Laterals are determined by the bin width. They should be built from the main duct to within one foot of the outside wall. They should be spaced 2 feet from the center of one lateral to the center of the next, with the first lateral about one foot from the bin wall. Cleats will keep them from shifting when the bin is filled. Size of material used for laterals depends on the width of the bin. If storage space on either side of the main duct is 8 feet or less, it should be built 8 inches square; from 8 feet to 14 feet, 10 inches square is a desirable size and 12 inches square if the width is from 14 to 20 feet.



Mr. and Mrs. Howard Tranmer of Decatur view the Inter-Industry exhibit. They are consumers of Burt County Rural Public Power District.

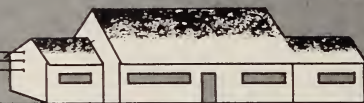


The calendar on the
next two pages is a
coordinated effort of the
entire electric industry.

ELECTRIC INDUSTRY'S

19

HOME



	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
NATIONAL ELECTRICAL WEEK		8-14										
ALL ELECTRIC LIVING		●	●									
ALL ELECTRIC KITCHEN				●	●							
ALL ELECTRIC LAUNDRY									●	●		
ALL ELECTRIC GIFTS											●	●
ELECTRIC HOUSE HEATING				●	●	●			●	●		

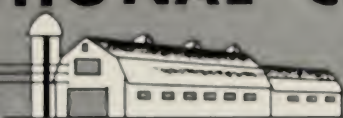
Promote the best in wiring and lighting along with every electric application.

LET YOUR DEALERS KNOW: Promotion for the entire industry in 1959 will be concentrated during the periods shown on the new Calendar. Discuss promotions you are planning with your dealers. Good dealer relations are important—they can help boost your sales and load factor.

LET YOUR CONSUMERS KNOW: Use newspapers, radio and other local media for your power use promotions. Remind your consumers constantly. Don't let them forget that their local power supplier is co-operating in the national effort for efficient power use in the home and on the farm.

59 PROMOTIONAL CALENDAR

FARM



	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
ELECTRICAL BROODING	★	★										
ELECTRIC WATER HEATERS			★							★		
ELECTRICAL CROP CONDITIONING EQUIPMENT				★					★			
SPRINKLER IRRIGATION			★	★								
FARM WATER SYSTEMS			★	★	★				★	★		
FOOD FREEZERS					★	★	★	★				
FARM CHORING EQUIPMENT				★					★			
VENTILATION OF FARM BUILDINGS						★					★	
ELECTRIC HEAT APPLICATIONS ON THE FARM												★
WIRING, REWIRING AND LIGHTING	←————→											

in with all existing national programs that will help you do this job.

CHOOSE YOUR ITEMS FOR PROMOTION: Promotions directed to the home in the national campaign are quite broad; farm promotions are more specific. Use the Calendar when you choose the item or items that will best fit in with your local promotion. It will help you cash in to best advantage.

CHECK YOUR RESULTS: A checkup on results will show you if you could have done an even better job. Close attention to details pays off in increased sales, higher load factor.

POWER USE EXCHANGE



“THE WORKS”—Since May 1, Kay Electric Cooperative, Blackwell, Okla., has been running a big 5-appliance promotion featuring “Free Trial, Free Wiring, Free Electricity, Free Chance.” Free wiring and 2-months free electricity go to “any member who purchases for the first time and uses on Kay Electric lines any of the following: range, water heater (30 gal. or larger), clothes dryer, heat pump or reverse cycle type window air conditioner.” Free electricity for air conditioner (for heating) will start after October 15. Co-op furnishes a range or clothes dryer to any member for 2-months free trial. Trial model dryer does not require plumbing or venting. Every first-time purchaser of any of the appliances being promoted gets a chance on another major appliance. Drawing will be held after Dec. 31, closing date of the promotion.

CHOICE OF BONUS—Purchase of a television set, an air conditioner (1-ton or over), a water system, or any major household appliance qualifies consumers served by Southwest Public Power District, Palisade, Neb., to make a selection from several electric housewares: skillet, saucepan, griddle, toaster, hand mixer, hair dryer, refrigerator ice cream freezer. Presentation of dealer’s

sales slip for new equipment brings the bonus after installation is inspected.

IDLE SERVICES — Faced with 257 idle services, a line retainer charge of \$21 per year for any service that remains idle for more than one year was adopted by directors of Northern Electric Cooperative Association, Virginia, Minn. Service will be removed from all premises where the Co-op fails to receive a response to a letter explaining the policy to the owners. Should it become necessary to restore service to the same party a charge will be made to cover labor costs of removal and reinstallation of the line.

SCHOOL HEATING — October *Electric News* of Tuscarawas-Coshocton Electric Cooperative, Coshocton, Ohio, features a 4-page photo story on electric heating of the new addition to Union school, which houses the lower school grades in a part of the Co-op’s area.

KEYSORT SURVEY — Keysort survey cards were sent to all members of Osceola Electric Cooperative, Sibley, Iowa, to make the work of sorting and tabulating adequate service survey cards much easier.

Big Advantages in Small Packages



Convenience, good looks, comfort, and economy have been wrapped up in the new headquarters buildings of three REA telephone borrowers in Maine. All three have built small modern buildings. All have kept the cost of office space within the reasonable range of from \$13 to \$17 per square foot. And all are viewed with pride by the people of the rural communities which they serve.

AT Raymond, Maine, the Poland Telephone Co. features a smart, modern design, with concrete block construction, brick facing, and white wood trim. Windows line one side to provide offices with plenty of light, and a floor-to-ceiling window and glass vestibule let in maximum light for the front service counter. Adding to the bright cheerfulness are soft gray-green walls and sunny yellow drapes.

President Charles Ricker's office makes use of contrasting wall materials, with one wall of windows, one of light mahogany panels, one of brick, and one of heavy opaque glass.

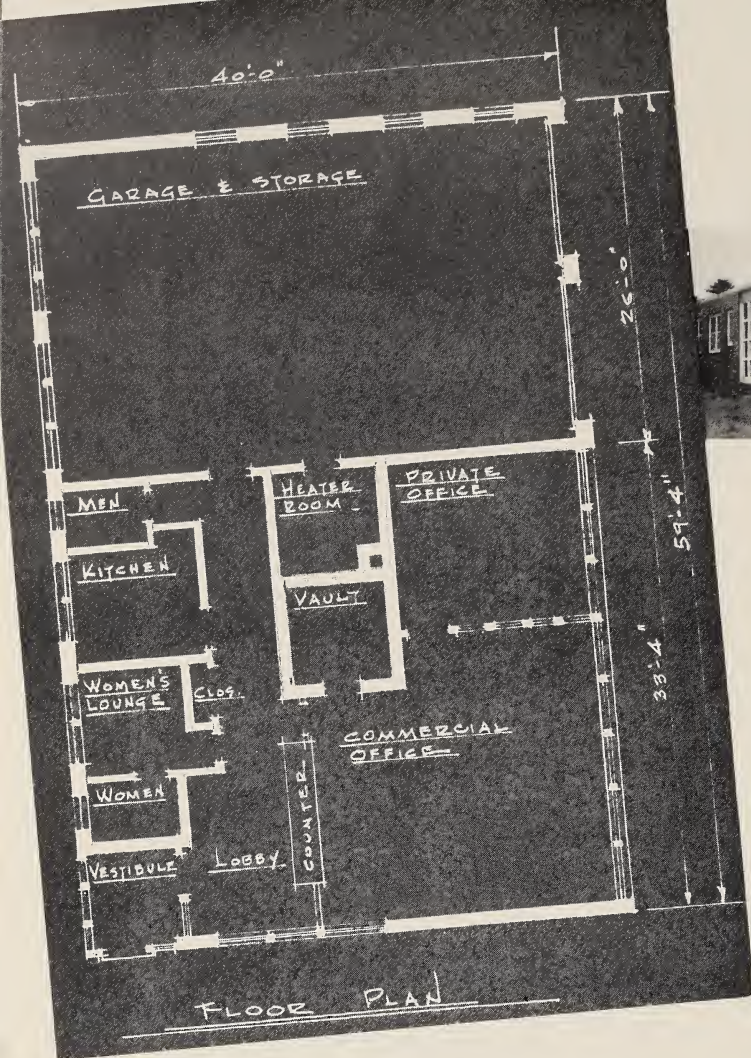
Heart of Poland's building is a fire-resistant vault for storage of important records. This adds valuable protection to the company's business, for even in a fire-resistant building an inside fire might cause serious damage.

One special feature seems likely to prove an employee morale-builder. Not only is there an attractive lounge adjoining the women's rest room, but also a convenient kitchen with up-to-date electrical equipment. During long Maine winters extra hours of work sometimes face both line crew and office staff. It's a good idea to have a place where meals can be prepared in emergencies.

By building an attached garage, Poland gained two opportunities to save money. The common wall between office and garage kept construction costs down, and both areas can be heated by the same system.

President Ricker credits many of the desirable features of his new building to the fact that Poland employed a registered area architect, who was familiar with modern construction methods and materials.

UNITY, a pleasant small town a few miles north and east of Raymond, is home of the second in this trio of Maine rural telephone companies. The Unity Telephone Company, which received its first REA loan in 1955, now has 850 subscribers. Its switchboard was for many years an important furnishing of the living room of its chief operator. The new building is just a few doors



New and modern in design is the commercial office of the Poland Telephone Company, Raymond, Maine. Adjoining floor plan shows convenient arrangement and attached garage.

down the street. It's a simple rectangle in shape, with only 30 feet of frontage, of concrete masonry construction, with two big windows in front. It is trim and business-like in appearance.

In contrast to Poland, Unity has a dial room and commercial office under the same roof. Dividing them is a long, narrow room for storage of small equipment, which also provides desk space for the plant supervisor. President Harry Brown points out that one great advantage of an attached dial building is its

convenient access from the commercial office. This speeds up the locating and correcting of line trouble. Furthermore, the combined structure brings savings in fuel bills, since only a single heating plant is necessary.

At Unity everybody works in one big room. The manager's desk is in the center and the two office employees have their desks at the windows. A coat room and rest rooms take up the remaining space.

If more room is ever needed, it would be comparatively easy

to build an addition, and if a change in office arrangements is desirable, partitions might be installed.

THE Unity Telephone Company business office is completely plain and unadorned, but it could be dressed up at some time in the future by brick-venereing the building. In the meantime, rural people in the area have modern, efficient telephone service from a company whose headquarters can be described by the same words—modern and efficient.

The brand new headquarters building of the Saco River Telegraph and Telephone Company at Bar Mills, Maine, has only a couple of old-fashioned features. One is a handsome grandfather clock in the manager's office; the other is a photograph of the original directory of the company, dated August 20, 1894. This contains 15 names, in contrast to today's book with its 1022 subscribers. The company was formed in 1889 and is the



Here's effective use of small lot in center of town. Unity Telephone Company, Unity, Maine. Attached dial building is at rear.

oldest independent telephone company in Maine—one of the oldest in the United States. Its first REA loan was in June, 1955.

This building is of cinder block construction, faced with red brick. It is traditional in design from the front, appearing much like the familiar Cape Cod cottage. From the rear one can see that it is a 2-level structure with a downstairs shop, storage room and garage. Situated on a rise of ground and set off by a sweep of green lawn, the Saco River Company stands out as one of the most attractive business establishments for miles around. At the right of the large and cheerful commercial office is a pleasant room used for directors' meet-



This attractive red brick building is the new home of the oldest independent telephone company in Maine—Saco River Telegraph & Telephone Company, Bar Mills.

ings; at the left is Manager Harold Carroll's pine-paneled office. Each room is decorated in a different light color, giving a cheerful general effect throughout. Wall colors are echoed by the display of colored telephone instruments on the front counter. Spacious grounds surround this building, giving plenty of space for an unattended dial building and a warehouse nearby.

Are there any disadvantages in these three new buildings? Only a few and they're mentioned here simply as items for consideration by REA telephone borrowers who may have new homes in mind.

For example:

Item 1: One manager wishes the garage were a few feet longer, to permit some cable storage in a more convenient location than the warehouse, which is located some distance away.

Item 2: Another manager would, if possible, rearrange the buildings slightly so that the garage would be closer to the dial building. Then one driveway could serve both. This would be more convenient and also would cut the cost of road construction and black-topping.

Item 3: The door to the storage room in one commercial building is too small to permit easy moving of large crates or equipment. This company knows now that more care in planning storage and supply rooms can mean greater convenience and saving of time.

Item 4: One manager regrets that the building plans did not

provide a small separate office for his use. Not only do his business callers sometimes wish to talk with him privately, but the office employees often find these callers an unavoidable interruption to the routine work. Installing folding doors and partitions might be considered to help make office arrangement flexible.

ANY company planning to build should take a long look into the future. If considerable growth can be foreseen, it is advisable to make allowance for this. In all the buildings described there's likely to be a problem of space if more employees or extra equipment are added.

Fire-resistance should be one of the main considerations in the building plans of any REA borrower—for safety's sake, to keep insurance costs down, and most important of all, to assure staying in business. No amount of insurance can compensate either the company or the community for the trouble and inconvenience that comes with the loss of communications facilities. These three new Maine telephone buildings are of the fire-resistant masonry construction that REA recommends.

In addition to convenience, good looks, comfort and economy, all three of these rural telephone buildings possess another highly important quality. Each provides the company with a commercial office building which adds to its prestige and helps to give it the place of dignity it deserves as one of the community's most valuable assets.

Central Office Trouble Records

by William P. Stokesberry
REA Staff Engineer



NO preventive maintenance program for a dial central office is complete without some procedure for recording the routine tests performed along with the troubles discovered and corrected.

Trouble records are important tools for analyzing results of routine tests and for keeping tabs on the clearance of central office troubles which originate from subscriber complaints. They also enable the manager to determine the central office trouble rate. This can be a good measure of the effectiveness of the maintenance work.

It isn't hard to figure the rate. Let's say, for example, that you have 702 stations or subscribers in the Kenton Exchange. During September, you experienced a total of 34 cases of trouble.

To determine the trouble rate, first divide the number of stations, 702, by 100. The answer is 7.02. Then divide 34—the cases of trouble—by 7.02. This answer, 4.84, represents the cases of trouble per 100 stations per

month, or the trouble rate for the Kenton Exchange for the month of September.

Only 6 cases of trouble were experienced in the central office and in carrier equipment. Dividing 6 by 7.02 is .85, the monthly trouble rate for the central office.

The trouble rate provides information on which you can determine proper intervals between routine tests. If the trouble rate remains low, intervals between tests can be lengthened as long as the rate does not increase. This procedure usually results in a reduction in central office maintenance costs without hurting the service or the life of the equipment.

Finally, central office trouble records measure the quality of service being rendered to subscribers.

Detailed central office equipment trouble records should be kept for each office, so that each office can be individually analyzed. Many companies maintain trouble records on components of the equipment. For instance, sys-

Maintenance costs can be lowered and service improved if preventive maintenance activity

Good plant records don't cost money. They save money because they speed up plant work—construction—installations—maintenance — reduce replacements — prolong the life of the equipment —and improve service.

These sample record forms are included in Section 1266 of the REA Telephone Operations Manual, which includes a discussion of trouble records.



Celebration at Delta

“THIS is a most happy occasion for all of us, but I must confess to some feeling of sadness. That old switchboard and I have been through a lot together.”

The happy occasion referred to by O. J. Stone was the cutover celebration of the Delta County Cooperative Telephone Company at the fairgrounds in Hotchkiss, Colorado. It was a barbecue and open house attended by almost a thousand people, in spite of the fact that the occasion coincided with the opening of Colorado's big game hunting season and with the peak of the apple harvest. O. J. Stone, secretary and manager of the Delta telephone co-op, introduced the celebration's guest speakers, from the Mountain States Telephone Company and from REA.

The switchboard Stone mentioned is a handsome piece of antique oak furniture, which, until the cutover, had been in use during all of Stone's 52 years as manager of the Delta County company. It is now retired to a storeroom in the new dial central office at Paonia. Someday future generations may view it in an historical museum and so learn about telephone pioneering in Colorado. They will learn about

Mr. Stone, also, for he was a prime mover in modernizing the Delta co-op's system, as well as being a pioneer in early telephony.

The Delta County company was organized in 1897, not too long after the covered wagons of white settlers followed the departing Ute Indians into this picturesque section of the Western Slope of Colorado. The new settlers, largely from the Middle West, ranged sheep and cattle on the mesas of Delta County, and soon, with the help of irrigation, started the peach and apple orchards for which this region is famous.

Angus McKee, octogenarian builder of the original line, was present at the celebration and gave a brief account of the beginning years. Fifty subscribers were necessary, each putting up 10 dollars to capitalize the venture. By popular demand, the lines quickly spread from Hotchkiss to Paonia to Delta and to Cedaredge. Fruit growers quickly realized how valuable the telephone was in marketing their perishable harvest.

HOWEVER, while the Delta County co-op's lines were spreading, the Mountain States



The new line and the old along a road near Paonia.

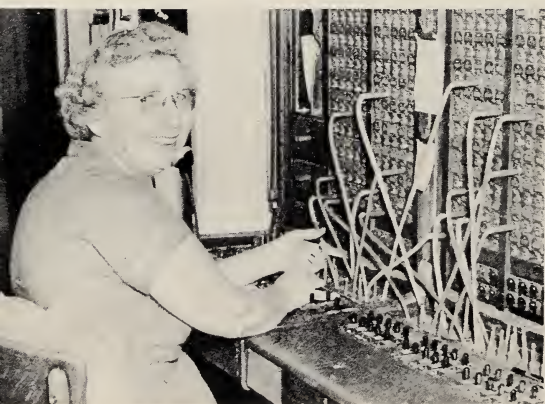
Telephone and Telegraph Company was expanding in the same area. Because both companies served the same area, the co-op had no toll outlet. Many subscribers had two telephones, one of each company. The president of the Delta County co-op company, H. H. Addams, banker in Hotchkiss, still keeps two telephones on his desk as a reminder of those years. Since the region's principal commodity depended on rapid communication with markets, the situation was pretty untenable for subscribers. It was equally so for both telephone companies.

Two speakers at the celebration commented on the agreement between the two companies which made telephone history and brought about modernization of the Delta County co-op's system. They were D. A. McLean of the Mountain States company and Everett Weitzell of REA.

The two companies agreed to divide the area. Each company agreed to purchase the other's facilities in the area it would serve. In 1955 the co-op was serving 2,382 subscribers with magneto and common battery service. The new system, when completed, will consist of 619 miles of line serving 2,723 subscribers, through exchanges at Cedaredge, Crawford, Eckert, Hotchkiss, and Paonia.

TOTAL loans approved to accomplish the completed dial system amount to \$1,664,000. This is considerably greater than the original capitalization required by Angus McKee. The system is also considerably greater than the first primitive line. A micro-wave station enables the co-op to serve settlements on top of the Grand Mesa, which rises a sheer 1,000 feet above surrounding territory in Delta County. Subscribers on nearby Ragged Mountain are also served by the Delta co-op.

Actual cutover occurred on October 5th. Acquisition closing of Mountain States properties to be taken over by Delta was deferred until then in order that the existing service might be continued without interruption.



Eva Heasten operated the old switchboard at Paonia before the cutover.



Phone lines climb a mesa on the range above the fruit orchards.

The cooperative's new offices were on open-house display on the day of the celebration. During the construction period business was conducted from the real estate office of Director Dorsey Hawkins in Paonia. Also on view was the dial central office, the micro-wave station, and other facilities.

CONDUCTED tours for subscribers were given by co-op personnel after everyone had finished with his share of the 1400 pounds of pit-barbecue beef. This was served after a series of short speeches and introductions by officials and guests, including: Hotchkiss' Mayor Oscar Coffey; President H. H. Addams; D. A. McLean; Mr. Stone; Mr. McKee; C. M. Blair of Mountain States; Norman Mills, Consulting Engineer; and Board Members J. W. Jeffries; D. C. Hawkins; John J. Mills; Clarence Drexel; and Roderick N. Stewart.

Previously, a party had been given by the Board and Manager Stone for the co-op's retiring telephone operators, many of whom had known each other for years on the telephone, yet had never met.

To quote one beaming lady attending the cutover party, "We live way over there," pointing to

President H. H. Addams(left) introduces Manager O. J. Stone (right) to barbecue guests.



Microwave station beams phone message to the Grand Mesa.

a mesa above the town of Hotchkiss.

"Last week we called our boy in school at Boulder. It was worth the price of the call to hear his surprise and pleasure. He said it seemed like we were right there in Boulder, way over in eastern Colorado."



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